

SEQUENCE LISTING

<110> Travis, James

Potempa, Jan S

Banbula, Agnieszka

<120> Dipeptidylpeptidases And Methods Of Use

<130> 235.00440101

<150> US 60/246,827

<151> 2000-11-08

<160> 26

<170> PatentIn version 3.0

<210> 1

<211> 2139

<212> DNA

<213> Porphyromonas gingivalis

<400> 1

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caagaactgg ccaaaaaaga aaatgcagac gagaaccaac tctgcatcgt agagcctttc      540
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ggtcttgctt	tcgatggcaa	ctgggaagct	atgagtgggtg	acatcgagtt	cgaacccgat	2040
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<211> 712

<212> PRT

<213> Porphyromonas gingivalis

<400> 2

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35 40 45
Leu Pro Leu Asp Ser Leu Tyr Ser Phe Asp Lys Pro Ser Ile Ala Asn
50 55 60
Ala Val Val Ile Phe Gly Gly Gly Cys Thr Gly Ile Thr Val Ser Asp
65 70 75 80
Gln Gly Leu Ile Phe Thr Asn His His Cys Gly Tyr Gly Ala Ile Gln
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Ser Gln Ser Thr Val Asp His Asp Tyr Leu Arg Asp Gly Phe Val Ser
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Arg Thr Met Gly Glu Glu Leu Pro Ile Pro Gly Leu Ser Val Lys Tyr
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Leu Arg Lys Ile Val Lys Val Thr Asp Lys Val Glu Gly Gln Leu Lys
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Gly Ile Thr Asp Glu Met Glu Arg Leu Arg Lys Ala Gln Glu Val Cys
145 150 155 160
Gln Glu Leu Ala Lys Lys Glu Asn Ala Asp Glu Asn Gln Leu Cys Ile
165 170 175
Val Glu Pro Phe Tyr Ser Asn Asn Glu Tyr Phe Leu Ile Val Tyr Asp
180 185 190
Val Phe Lys Asp Val Arg Met Val Phe Ala Pro Pro Ser Ser Val Gly
195 200 205
Lys Phe Gly Gly Asp Thr Asp Asn Trp Met Trp Pro Arg His Thr Gly
210 215 220
Asp Phe Ser Val Phe Arg Val Tyr Ala Gly Ala Asp Asn Arg Pro Ala
225 230 235 240
Glu Tyr Ser Lys Asp Asn Lys Pro Tyr Lys Pro Val Tyr Phe Ala Ala
245 250 255
Val Ser Met Gln Gly Tyr Lys Ala Asp Asp Tyr Ala Met Thr Ile Gly
260 265 270
Phe Pro Gly Ser Thr Asp Arg Tyr Leu Thr Ser Trp Gly Val Glu Asp
275 280 285
Arg Ile Glu Asn Glu Asn Asn Pro Arg Ile Glu Val Arg Gly Ile Lys
290 295 300
Gln Gly Ile Trp Lys Glu Ala Met Ser Ala Asp Gln Ala Thr Arg Ile
305 310 315 320
Lys Tyr Ala Ser Lys Tyr Ala Gln Ser Ala Asn Tyr Trp Lys Asn Ser
325 330 335

Ile Gly Met Asn Arg Gly Leu Ala Arg Leu Asp Val Ile Gly Arg Lys
 340 345 350
 Arg Ala Glu Glu Arg Ala Phe Ala Asp Trp Ile Arg Lys Asn Gly Lys
 355 360 365
 Ser Ala Val Tyr Gly Asp Val Leu Ser Ser Leu Glu Lys Ala Tyr Lys
 370 375 380
 Glu Gly Ala Lys Ala Asn Arg Glu Met Thr Tyr Leu Ser Glu Thr Leu
 385 390 395 400
 Phe Gly Gly Thr Glu Val Val Arg Phe Ala Gln Phe Ala Asn Ala Leu
 405 410 415
 Ala Thr Asn Pro Asp Ala His Ala Gly Ile Leu Lys Ser Leu Asp Asp
 420 425 430
 Lys Tyr Lys Asp Tyr Leu Pro Ser Leu Asp Arg Lys Val Leu Pro Ala
 435 440 445
 Met Leu Asp Ile Val Arg Arg Arg Ile Pro Ala Asp Lys Leu Pro Asp
 450 455 460
 Ile Phe Lys Asn Val Ile Asp Lys Lys Phe Lys Gly Asp Thr Lys Lys
 465 470 475 480
 Tyr Ala Asp Phe Val Phe Asp Lys Ser Val Val Pro Tyr Ser Asp Lys
 485 490 495
 Phe His Ala Met Leu Lys Ser Met Asp Lys Glu Lys Phe Ala Lys Ala
 500 505 510
 Ile Glu Lys Asp Pro Ala Val Glu Leu Ser Lys Ser Val Ile Ala Ala
 515 520 525
 Ala Arg Ala Ile Gln Ala Asp Ala Met Ala Asn Ala Tyr Ala Ile Glu
 530 535 540
 Lys Gly Lys Arg Leu Phe Phe Ala Gly Leu Arg Glu Met Tyr Pro Gly
 545 550 555 560
 Arg Ala Leu Pro Ser Asp Ala Asn Phe Thr Met Arg Met Ser Tyr Gly
 565 570 575
 Ser Ile Lys Gly Tyr Glu Pro Gln Asp Gly Ala Trp Tyr Asn Tyr His
 580 585 590
 Thr Thr Gly Lys Gly Val Leu Glu Lys Gln Asp Pro Lys Ser Asp Glu
 595 600 605
 Phe Ala Val Gln Glu Asn Ile Leu Asp Leu Phe Arg Thr Lys Asn Tyr
 610 615 620
 Gly Arg Tyr Ala Glu Asn Gly Gln Leu His Ile Ala Phe Leu Ser Asn
 625 630 635 640
 Asn Asp Ile Thr Gly Gly Asn Ser Gly Ser Pro Val Phe Asp Lys Asn
 645 650 655
 Gly Arg Leu Ile Gly Leu Ala Phe Asp Gly Asn Trp Glu Ala Met Ser
 660 665 670

Gly Asp Ile Glu Phe Glu Pro Asp Leu Gln Arg Thr Ile Ser Val Asp
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Ile Arg Tyr Val Leu Phe Met Ile Asp Lys Trp Gly Gln Cys Pro Arg
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Leu Ile Gln Glu Leu Lys Leu Ile
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<210> 3

<211> 52

<212> PRT

<213> Porphyromonas gingivalis

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Val Leu Phe Met
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<210> 4

<211> 52

<212> PRT

<213> Staphylococcus aureus

<400> 4

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Phe Ile Asn Glu Asn Val Arg Asn Phe Leu Lys Gln Asn Ile Glu Asp
35 40 45

Ile His Phe Ala
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<210> 5

<211> 734

<212> PRT

<213> Shewanella putrefaciens

<400> 5

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35 40 45
Asp Val Leu Lys Ala Lys Gly Leu Glu Ile Asp Ala Lys Ser Ile Ser
50 55 60
Lys Leu Thr Glu Phe Pro Met Asn Ala Val Ile Ser Leu Gly Gly Cys
65 70 75 80
Thr Ala Ser Phe Val Ser Pro Lys Gly Leu Val Val Thr Asn His His
85 90 95
Cys Ala Tyr Gly Ser Ile Gln Tyr Asn Ser Thr Pro Glu Lys Asn Leu
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Leu Gln Asp Gly Phe Leu Ala Lys Thr Phe Ala Asp Glu Leu Pro Ala
115 120 125
Ala Pro Gly Ser Arg Val Tyr Val Thr Glu Asp Val Thr Asn Val Thr
130 135 140
Glu Arg Val Lys Ala Gly Leu Glu Asn Lys Thr Gly Arg Glu Phe Tyr
145 150 155 160
Gln Gly Val Glu Asn Gln Glu Lys Ala Leu Val Ala Glu Cys Glu Lys
165 170 175
Asp Glu Gly Tyr Arg Cys Gln Val Tyr Ser Phe His Gly Gly Leu Glu
180 185 190
Tyr Tyr Leu Val Lys Gln Leu Glu Ile Arg Asp Val Arg Leu Val Tyr
195 200 205
Asn Pro Ala Gly Ser Val Gly Lys Tyr Gly Gly Asp Val Asp Asn Trp
210 215 220
Met Trp Pro Arg His Thr Gly Asp Tyr Ser Phe Tyr Arg Ala Tyr Val
225 230 235 240
Ser Lys Asn Gly Lys Pro Ala Glu Phe Ser Ala Asp Asn Val Pro Tyr
245 250 255
Glu Pro Lys Ser Phe Leu Lys Val Ser Ala Lys Gly Val Ser Glu Gly
260 265 270
Asp Phe Val Met Val Ala Gly Tyr Pro Gly Arg Thr Asn Arg Tyr Arg
275 280 285
Thr Ala Thr Glu Val Gln Asn Glu Phe Glu Trp Ala Tyr Pro Glu Gly
290 295 300
Lys Met Leu Arg Glu Arg Phe Ile Glu Ile Ile Lys Ala Thr Ala Pro
305 310 315 320

Glu Gly Ser Asp Glu Arg Ile Lys Tyr Glu Ser Gln Ile Ala Gly Leu
 325 330 335
 Ala Asn Tyr Ala Lys Asn Phe Thr Ser Met Ile Glu Phe Tyr Gly Lys
 340 345 350
 Ser Thr Met Leu Ala Asp Arg Lys Ala Leu Glu Ala Lys Leu Ala Glu
 355 360 365
 Trp Ile Ala Lys Asp Ser Ser Arg Glu Ala Lys Tyr Gly Lys Thr Leu
 370 375 380
 Ala Glu Leu Asp Ala Leu Ile Ala Lys Ser Lys Ala His Gln Glu Arg
 385 390 395 400
 Asp Met Ile Leu Ser Tyr Ile Ser Ser Thr Thr Met Leu Pro Thr Ala
 405 410 415
 Asn Asn Leu Tyr Arg Leu Ala His Glu Lys Gln Leu Pro Asp Met Gln
 420 425 430
 Arg Glu Pro Gly Phe Gln Asp Arg Asp Met Thr Arg Phe Lys Ala Ser
 435 440 445
 Met Glu Arg Ile Asp Arg Arg Tyr Ala Ala Ser Val Asp Lys Ala Val
 450 455 460
 Leu Phe Asp Met Leu Lys Arg Tyr Ala Ala Leu Pro Glu Ala Gln Arg
 465 470 475 480
 Leu Pro Ala Met Asp Lys Ala Phe Gly Ile Asp Asn Lys Val Asn Glu
 485 490 495
 Ala Lys Leu Ala Lys Thr Leu Asp Lys Met Tyr Ala Lys Thr Glu Leu
 500 505 510
 Gly Asn Lys Asp Val Arg Leu Ala Trp Met Glu Lys Ser Val Asp Asp
 515 520 525
 Phe Lys Ala Ser Lys Asp Pro Phe Ile Gln Phe Ala Val Ala Met Tyr
 530 535 540
 Asp Thr Asn Met Ser Glu Glu Lys Lys Glu Lys Glu Leu Asp Gly Glu
 545 550 555 560
 Leu Met Lys Val Arg Pro Gln Tyr Met Asp Ala Ile Ile Ala Tyr Asn
 565 570 575
 Leu Glu Gln Gly Lys Pro Val Tyr Ala Asp Ala Asn Ser Ser Leu Arg
 580 585 590
 Val Thr Val Gly His Val Lys Gly Tyr Ser Pro Lys Asp Gly Leu Val
 595 600 605
 Ala Val Pro Phe Thr Arg Leu Glu Gly Ile Val Gln Lys Asp Thr Gly
 610 615 620
 Ile Asp Pro Phe Asp Ala Pro Lys Gln Gln Leu Glu Leu Ile Lys Gln
 625 630 635 640
 Lys Gln Tyr Gly Asp Phe Tyr Met Lys Ser Ile Asp Ser Val Pro Val
 645 650 655

Asn Phe Leu Ser Thr Leu Asp Thr Thr Gly Gly Asn Ser Gly Ser Pro
 660 665 670
 Thr Leu Asn Gly Arg Ala Glu Leu Val Gly Leu Leu Phe Asp Gly Val
 675 680 685
 Tyr Glu Ser Ile Ile Gly Gly Trp Ala Phe Asp Asn Glu Ile Asn Arg
 690 695 700
 Ser Ile His Val Asp Ser Arg Tyr Met Leu Trp Val Met Lys Tyr Leu
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 Asp His Ala Asp Asn Leu Leu Ala Glu Met Glu Ile Val Asn
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<210> 6

<211> 732

<212> PRT

<213> Shewanella putrefaciens

<400> 6

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 35 40 45
 Asp Leu Thr Ser Tyr Pro Met Asn Ala Val Val Gly Leu Gly Tyr Cys
 50 55 60
 Thr Ala Ser Phe Val Ser Pro Gln Gly Leu Val Val Thr Asn His His
 65 70 75 80
 Cys Ala Tyr Lys Ala Ile Gln Tyr Asn Thr Lys Lys Glu His Asn Tyr
 85 90 95
 Leu Glu Gln Gly Phe Leu Ala Thr Ser Met Asp Lys Glu Pro Ser Ala
 100 105 110
 Gly Pro Asn Glu Arg Leu Tyr Ile Thr Glu Ala Val Thr Asp Val Thr
 115 120 125
 Ser Asp Val Thr Lys Asp Leu Ser Gln Asp Pro Leu Lys Arg Tyr Glu
 130 135 140
 Glu Ile Glu Asn His Ser Lys Ala Leu Ile Lys Ser Cys Glu Ala Asp
 145 150 155 160
 Asp Asn Tyr Arg Cys Asn Val Arg Ser Phe His Asn Gly Leu Glu Tyr
 165 170 175
 Tyr Leu Ile Lys Gln Leu Met Ile Arg Asp Val Arg Leu Val Tyr Ala
 180 185 190
 Pro Pro Glu Ser Val Gly Gly Tyr Gly Gly Asp Ile Asp Asn Tyr Glu

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Lys 225	Asp	Gly	Lys	Pro	Ala 230	Ala	Phe	Ser	Glu	Asp 235	Asn	Ile	Pro	Tyr	Thr 240
Pro	Lys	Ser	Tyr	Leu 245	Lys	Val	Asn	Ala	Asp 250	Gly	Val	Lys	Ala	Gly 255	Asp
Gly	Val	Phe	Val 260	Ala	Gly	Tyr	Pro	Gly 265	Thr	Thr	Asn	Arg	Tyr 270	Asn	Leu
Thr	Ser	Glu 275	Leu	Lys	Phe	Ala	Ser 280	Asp	Trp	Leu	Tyr	Pro 285	Thr	Gln	Ala
Lys	Arg 290	Tyr	Gln	Leu	Gln	Ile 295	Asp	Thr	Ile	Glu	Ala 300	Met	Gly	Gln	Lys
Asp 305	Ala	Asp	Ile	Ala	Ile 310	Lys	Tyr	Ala	Gly	Asn 315	Met	Ala	Ser	Met	Ala 320
Asn	Arg	Met	Lys	Lys 325	Leu	Asn	Gly	Leu	Leu 330	Ala	Gly	Phe	Lys	Ala 335	Thr
Asp	Ile	Val	Gly 340	Ile	Lys	Gln	Gln	Arg 345	Glu	Asn	Asp	Phe	Leu 350	Ala	Trp
Leu	Thr	Lys 355	Asn	Pro	Asn	Leu	Asn 360	Gln	Asn	Leu	Ile	Ser 365	Glu	Leu	Glu
Val	Leu 370	Leu	Ala	Glu	Gln	Gln 375	Leu	Gln	Thr	Gln	Thr 380	Asn	Tyr	Tyr	Phe
Thr 385	Asn	Ala	Gln	Ser	Ser 390	Thr	Leu	Leu	Thr	Ala 395	Ala	Asn	Asn	Leu	Tyr 400
Arg	Leu	Ala	Lys	Glu 405	Lys	Gln	Lys	Ser	Asp 410	Ala	Glu	Arg	Glu	Ile 415	Gly
Tyr	Gln	Glu	Arg 420	Asp	Leu	Ala	Met	Phe 425	Ser	Ser	Arg	Leu	Lys 430	Arg	Ile
Asp	Ser	Ser 435	Phe	Asp	Val	Lys	Val 440	Asp	Lys	Thr	Leu	Trp 445	Leu	Gln	Asp
Leu	Asn 450	Ala	Tyr	Leu	Ser	Gln 455	Pro	Asn	Arg	Val	Ala 460	Ala	Leu	Asp	Asn
Met 465	Leu	Asn	Leu	Asn	Asp 470	Lys	Asn	Val	Ser	Leu 475	Ala	Ala	Lys	Leu	Asp 480
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Trp	Met	Glu	Ala 500	Asp	Ala	Lys	Ala	Phe 505	Glu	Thr	Ser	Ser	Asp 510	Pro	Phe
Ile	Arg	Leu 515	Ala	Val	Ala	Leu	Tyr 520	Asp	Thr	Asn	Met	Ala 525	Gln	Glu	Lys
Ala	Glu 530	Lys	Ile	Leu	Ala	Gly 535	Lys	Leu	Ser	Thr	Ala 540	Arg	Pro	Ala	Tyr

Met Ala Ala Val Ile Asp Tyr Tyr Lys Ala Asn Asn Trp Pro Val Tyr
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 Pro Asp Ala Asn Gly Thr Leu Arg Ile Ser Tyr Gly Met Val Asp Gly
 565 570 575
 Tyr Gln Ser Arg Asp Ala Leu Tyr Lys Gln Pro Phe Thr Arg Leu Asp
 580 585 590
 Gly Ile Val Ala Lys His Thr Gly Val Glu Pro Tyr Asn Ala Pro Lys
 595 600 605
 Lys Leu Leu Asp Ala Ile Ser Val Gln Arg Phe Gly Asp His Leu Val
 610 615 620
 Lys Ser Val Tyr Gln Asp Pro Arg Gly Trp Ile Cys Arg Leu Phe Ser
 625 630 635 640
 Cys Leu Asp Lys Pro Glu Glu Phe Asn Ser Val Pro Val Asn Phe Leu
 645 650 655
 Ser Ser Val Asp Thr Thr Gly Gly Asn Ser Gly Ser Pro Val Phe Asn
 660 665 670
 Gly Lys Gly Glu Leu Val Gly Leu Asn Phe Asp Ser Thr Tyr Glu Ala
 675 680 685
 Ile Thr Lys Asp Trp Phe Phe Asn Pro Thr Ile Thr Arg Ala Val His
 690 695 700
 Val Asp Ile Arg Tyr Ile Leu Trp Met Met Asp Glu Val Asp His Ala
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 Asp Asn Leu Ile Lys Glu Leu Asp Leu Val Arg Asn
 725 730
 <210> 7
 <211> 716
 <212> PRT
 <213> xylella fastidiosa

<400> 7

Met Arg Phe Asn Leu Leu Ser Leu Ser Val Leu Ala Thr Leu Ile Thr
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 Pro Glu Ile Ala Gly Pro Leu Lys Gln Ala Gly Leu Gln Leu Ser Pro
 35 40 45
 Glu Gln Leu Ser Asn Leu Thr Gly Asp Pro Met Gly Ala Val Val Ser
 50 55 60
 Leu Gly Asn Cys Thr Ala Ser Leu Val Ser Pro Glu Gly Leu Val Ile
 65 70 75 80

<400> 8

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			20					25					30		
Glu	Leu	Asn	Gln	Glu	Asn	Leu	Asp	Arg	Met	Arg	Glu	Leu	Gly	Phe	Thr
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Leu	Pro	Leu	Asp	Ser	Leu	Tyr	Ser	Phe	Asp	Lys	Pro	Ser	Ile	Ala	Asn
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Ala	Val	Val	Ile	Phe	Gly	Gly	Gly	Cys	Thr	Gly	Ile	Thr	Val	Ser	Asp
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Gln	Gly	Leu	Ile	Phe	Thr	Asn	His	His	Cys	Gly	Tyr	Gly	Ala	Ile	Gln
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Ser	Gln	Ser	Thr	Val	Asp	His	Asp	Tyr	Leu	Arg	Asp	Gly	Phe	Val	Ser
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Gly	Ile	Thr	Asp	Glu	Met	Glu	Arg	Leu	Arg	Lys	Ala	Gln	Glu	Val	Cys
145					150					155					160
Gln	Glu	Leu	Ala	Lys	Lys	Glu	Asn	Ala	Asp	Glu	Asn	Gln	Leu	Cys	Ile
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Val	Glu	Pro	Phe	Tyr	Ser	Asn	Asn	Glu	Tyr	Phe	Leu	Ile	Val	Tyr	Asp
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Val	Phe	Lys	Asp	Val	Arg	Met	Val	Phe	Ala	Pro	Pro	Ser	Ser	Val	Gly
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Lys	Phe	Gly	Gly	Asp	Thr	Asp	Asn	Trp	Met	Trp	Pro	Arg	His	Thr	Gly
	210					215					220				
Asp	Phe	Ser	Val	Phe	Arg	Val	Tyr	Ala	Gly	Ala	Asp	Asn	Arg	Pro	Ala
225					230					235					240
Glu	Tyr	Ser	Lys	Asp	Asn	Lys	Pro	Tyr	Lys	Pro	Val	Tyr	Phe	Ala	Ala
				245					250					255	
Val	Ser	Met	Gln	Gly	Tyr	Lys	Ala	Asp	Asp	Tyr	Ala	Met	Thr	Ile	Gly
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Phe	Pro	Gly	Ser	Thr	Asp	Arg	Tyr	Leu	Thr	Ser	Trp	Gly	Val	Glu	Asp
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Arg	Ile	Glu	Asn	Glu	Asn	Asn	Pro	Arg	Ile	Glu	Val	Arg	Gly	Ile	Lys
	290					295					300				
Gln	Gly	Ile	Trp	Lys	Glu	Ala	Met	Ser	Ala	Asp	Gln	Ala	Thr	Arg	Ile
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Lys Tyr Ala Ser Lys Tyr Ala Gln Ser Ala Asn Tyr Trp Lys Asn Ser
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 Ile Gly Met Asn Arg Gly Leu Ala Arg Leu Asp Val Ile Gly Arg Lys
 340 345 350
 Arg Ala Glu Glu Arg Ala Phe Ala Asp Trp Ile Arg Lys Asn Gly Lys
 355 360 365
 Ser Ala Val Tyr Gly Asp Val Leu Ser Ser Leu Glu Lys Ala Tyr Lys
 370 375 380
 Glu Gly Ala Lys Ala Asn Arg Glu Met Thr Tyr Leu Ser Glu Thr Leu
 385 390 395 400
 Phe Gly Gly Thr Glu Val Val Arg Phe Ala Gln Phe Ala Asn Ala Leu
 405 410 415
 Ala Thr Asn Pro Asp Ala His Ala Gly Ile Leu Lys Ser Leu Asp Asp
 420 425 430
 Lys Tyr Lys Asp Tyr Leu Pro Ser Leu Asp Arg Lys Val Leu Pro Ala
 435 440 445
 Met Leu Asp Ile Val Arg Arg Arg Ile Pro Ala Asp Lys Leu Pro Asp
 450 455 460
 Ile Phe Lys Asn Val Ile Asp Lys Lys Phe Lys Gly Asp Thr Lys Lys
 465 470 475 480
 Tyr Ala Asp Phe Val Phe Asp Lys Ser Val Val Pro Tyr Ser Asp Lys
 485 490 495
 Phe His Ala Met Leu Lys Ser Met Asp Lys Glu Lys Phe Ala Lys Ala
 500 505 510
 Ile Glu Lys Asp Pro Ala Val Glu Leu Ser Lys Ser Val Ile Ala Ala
 515 520 525
 Ala Arg Ala Ile Gln Ala Asp Ala Met Ala Asn Ala Tyr Ala Ile Glu
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 Lys Gly Lys Arg Leu Phe Phe Ala Gly Leu Arg Glu Met Tyr Pro Gly
 545 550 555 560
 Arg Ala Leu Pro Ser Asp Ala Asn Phe Thr Met Arg Met Ser Tyr Gly
 565 570 575
 Ser Ile Lys Gly Tyr Glu Pro Gln Asp Gly Ala Trp Tyr Asn Tyr His
 580 585 590
 Thr Thr Gly Lys Gly Val Leu Glu Lys Gln Asp Pro Lys Ser Asp Glu
 595 600 605
 Phe Ala Val Gln Glu Asn Ile Leu Asp Leu Phe Arg Thr Lys Asn Tyr
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 Gly Arg Tyr Ala Glu Asn Gly Gln Leu His Ile Ala Phe Leu Ser Asn
 625 630 635 640
 Asn Asp Ile Thr Gly Gly Asn Ser Gly Ser Pro Val Phe Asp Lys Asn
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 Gly Arg Leu Ile Gly Leu Ala Phe Asp Gly Asn Trp Glu Ala Met Ser

Pro Ala Pro Tyr Ser Glu Asp Asn Val Pro Leu Lys Pro Lys Arg Phe
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 Phe Asn Ile Ser Leu Gly Gly Val Gln Glu Asn Asp Tyr Ala Met Ile
 260 265 270
 Met Gly Phe Pro Gly Thr Thr His Arg Tyr Phe Thr Ala Ser Glu Val
 275 280 285
 Asp Glu Trp Lys Ser Ile Asp Asn Asp Ile Arg Ile Arg Met Arg Asp
 290 295 300
 Ile Arg Gln Gly Val Met Leu Arg Glu Met Leu Ala Asp Pro Gln Ile
 305 310 315 320
 Lys Ile Met Tyr Ser Ala Lys Tyr Ala Ala Ser Gln Asn Ala Tyr Lys
 325 330 335
 Arg Ala Ile Gly Ala Asn Trp Ala Ile Lys Thr Arg Gly Leu Arg Gln
 340 345 350
 Asn Lys Gln Ala Met Gln Asp Arg Leu Ile Ala Trp Gly Ala Lys Gln
 355 360 365
 Gly Thr Pro Arg Tyr Glu Glu Ala Val His Glu Ile Asp Ala Thr Val
 370 375 380
 Ala Lys Arg Ala Asp Leu Arg Arg Arg Tyr Trp Met Ile Glu Glu Gly
 385 390 395 400
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 Glu Thr Lys Ala Leu Gln Gly Asn Asp Ala Ser Ala Arg Lys Glu Ala
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 Ile Asp Lys Ile Arg Thr Arg Tyr Ser Lys Phe Ala Asn Lys Asp Tyr
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 Ser Ala Glu Val Asp Lys Lys Val Ala Val Ala Met Leu Thr Glu Tyr
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 Leu Lys Glu Ile Pro Tyr Glu Asn Leu Pro Leu His Leu Arg Leu Val
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 Lys Asp Arg Phe Ala Gly Asp Val Gln Ala Tyr Val Asp Asp Ile Phe
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 Val Pro Ser Val Glu Lys Leu Ala Glu Asp Pro Met Val Leu Phe Ala
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 Ser Ser Val Phe Asp Glu Tyr Arg Lys Leu Tyr Asn Glu Leu Arg Pro
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 Leu Glu Met Asp Gly Asp Gln Asp Gln Phe Pro Asp Ala Asn Leu Thr
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